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TAXONOMY OF *SICYOS* (CUCURBITACEAE) IN THE USA

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ABSTRACT

Four species of *Sicyos* occur in the USA. *Sicyos angulatus* is widespread in eastern states, while *S. glaber*, *S. laciniatus*, and *S. microphyllus* occur in Texas, New Mexico, and Arizona. A key, nomenclatural summaries, and morphological descriptions are provided. The three southwestern USA species are mapped at county level.

KEY WORDS: *Sicyos*, Cucurbitaceae, USA

In the Texas flora Correll and Johnston (1970) treated five species of *Sicyos*: *S. ampelophyllus*, *S. angulatus*, *S. glaber*, *S. laciniatus*, and *S. parviflorus*. Johnston (1990) added *S. microphyllus* to this group — "according to Henrickson (personal communication 1985) found in the Davis and Chisos mountains." Martin and Hutchins (1981) included *S. glaber*, *S. laciniatus*, and *S. parviflorus* in their account of New Mexican plants. Kearney and Peebles (1960) recognized *S. ampelophyllus* and *S. laciniatus* as occurring in Arizona. Rodríguez Arévalo (2001) has studied the genus in Mexico, but the thesis is unpublished and I have not seen it.

Recently, Turner et al. (2003) took a conservative view and mapped only two species for Texas, *S. angulatus* and *S. microphyllus*, indicating that the latter included plants earlier identified by Correll and Johnston as *S. ampelophyllus*, *S. glaber*, and *S. laciniatus*. For the USA, the PLANTS Database (USDA, NRCS 2011) includes all five of the species treated by Correll and Johnston and adds *S. microphyllus* to the account, presumably following Johnston (1990). All of these species names except *S. angulatus* — which correctly applies to the eastern North American species — have been used to identify specimens in major herbaria of the southwestern USA (SEINET 2010).

In preparation of the FNANM Cucurbitaceae treatment and for its documentation, I have reviewed *Sicyos* taxonomy and provide here an account based on study of approximately 250 collections from ARIZ, BRIT-SMU-VDB, LL-TEX, NMC, and RM.

1. Fruits ovoid-beaked, 9–15 mm long; stigmas 3-lobed; eastern USA ..... 1. **Sicyos angulatus**
1. Fruits ovoid, 4–8 mm long; stigmas 2-lobed or 3-lobed; southwestern USA (trans-Pecos Texas, New Mexico, Arizona).

2. Fruits without bristles ..... 2. **Sicyos glaber**
2. Fruits with antrorsely barbellate bristles.

3. Staminate inflorescence 10–16-flowered, peduncle and floral axis 40–140 mm long; stigmas 3-lobed; mature stems glabrate to sparsely minutely stipitate-glandular; leaves mostly deeply lobed, sinuses (1/3) 1/2–2/3 to base, margins not dentate, evenly sharply indurate-apiculate, proximal pairs of lateral veins divergent from the edge of the basal sinus
..... 3. **Sicyos microphyllus**
3. Staminate inflorescence 3–10-flowered, peduncle and floral axis 3–25 mm long; stigmas 2-lobed; mature stems glabrescent but remaining villous and stipitate-glandular; leaves shallowly lobed to angulate, sinuses 1/5–1/4 to base, margins evenly and shallowly dentate with sharply

indurate-apiculate teeth, proximal pairs of lateral veins closely bordering the edge of the basal sinus ..... 4. **Sicyos laciniatus**

1. **SICYOS GLABER** Woot., Bull. Torrey Bot. Club 25: 310. 1898. **TYPE: USA**. New Mexico. Dona Ana Co.: Organ Mts, S of San Augustine Ranch, 5000 ft, 1 Sep 1897, *E.O. Wooton 606* (possible holotype: US; probable isotype: NY digital image!). *Wooton 606* is not housed at NMC; the US specimen is labeled as an "isotype" fide the type database, but the image is not available.

Annuals. **Stems** mostly glabrous to very sparsely hirsutulous, youngest portions sparsely villous with flattened hairs mixed with glandular-puberulent vestiture. **Leaves**: blades pentagonal-angulate to reniform-angulate, (3–)4–7 cm long, 5–9 cm wide, shallowly 5-angulate, sinuses 1/4–1/3 to base, terminal lobe deltate-acuminate, base concave to semicircular, margins evenly subfoliaceous-apiculate, ciliate, both surfaces hirsute-hispidulous with short hairs; proximal pair of lateral veins closely parallel to slightly divergent from the edge of the basal sinus; petioles 1–3(–4.5) cm long. **Pistillate inflorescence** 4–10-flowered, not enveloped by bracteal leaf, peduncle 5–8 mm long. **Staminate inflorescence** 6–22-flowered; peduncle plus axis 15–100(–140) mm long. **Pistillate flowers**: sepals mostly narrowly triangular, 0.5–1.5 mm long, not foliaceous; corollas 2–3 mm long, including the narrow tube; stigmas 2-lobed. **Staminate flowers**: corollas 2–4 mm long, greenish-yellow to yellow; stamens slightly exserted. **Fruits** ovoid, 4–6 mm long, glabrous to sparsely villosulous, without bristles.

Flowering Aug–Sep. Canyon bottoms, open slopes, talus, dry drainages, sycamore, juniper-mountain mahogany, chaparral; 1800–2000 m; New Mexico (Dona Ana Co.), Texas (Brewster, Culberson, El Paso, Jeff Davis cos.); probably in Chihuahua, Mexico, but apparently not documented from there. Distribution mapped in Figure 2.

Additional collections examined. **NEW MEXICO. Dona Ana Co.**: Organ Mts.: Dripping Springs-Boyd Ranch, rocky canyon on an open slope on the W face of the Organ Mts., ca. 6000 ft, 21 Oct 1950, *Dunn 7242* (NMC); 5 km E of Las Cruces, Fillmore Canyon, wetland and below spring, canyon bottom, Baccharis glutinosa dominant, 6200 ft, 6 Oct 1989, *Skaggs s.n.* (NMC); Aguirre Springs Recreataion Area, Pine Tree Trail, entwined in Rhus trilobaata on dry , 30 degree, E-facing slope, 1819 m, 14 Sep 1991, *Skaggs 49* (NMC); Dripping Springs Natural Area, open talus slopes, entwined in Pericome caudate, 1830 m, 18 Sep 1991, *Skaggs 50* (NMC); Modoc, 28 Sep 1902, *Wooton s.n.* (NMC, RM); Soledad Canyon, 11 Sep 1904, *Wooton s.n.* (NMC); Filmore Canon, 23 Oct 1904, *Wooton s.n.* (NMC). **[Hidalgo Co.**: Guadalupe Mtns, Bottom Guadalupe Canyon, in shade of sycamores 22 Aug 1956, *Castetter 11272* (UNM, identified as *S. glaber* by D. Kearns, fide SEINET 2011)]. **TEXAS. Brewster Co.**: Big Bend National Park, Chisos Mts., Lost Mine Peak, ca 7300 ft, 12 Sep 1961, *Correll & Johnston 24538* (LL); Chisos Mts., 14 Aug 1931, *Mueller 8271* (TEX); Chisos Mts, rare vine below dam on trail to South Rim above Boot Spring, 6500 ft, 10 Sep 1950, *Warnock 9746* (LL, SMU). **Culberson Co.**: Guadalupe Mts., Pine Spring Canyon, flowers yellow, 29 Sep 1962, *Correll & Correll 26101* (LL). **El Paso Co.**: Franklin Mts., 0.5 air mi NE of the top of North Franklin Mountain, 6600 ft, 13 Oct 1984, *Worthington 12743* (NMC, TEX). **Jeff Davis Co.**: Davis Mts., infrequent above upper springs in Madera Canyon on Mt. Livermore, 7800 ft, 11 Sep 1947, *Warnock 7456* (LL, SMU-2 sheets, TEX).

The identity of this species is clear — Wooton described the fruits as "slightly compressed, ovoid, 5 mm long, entirely glabrous, the outer coat thin, the inner indurated, black, tuberculate-roughened." Other species of *Sicyos* also consistently have fruits without bristles, e.g., the Mexican *S. dieterleae* Rodriguez-Arevalo & Lira, *S. lirae* Rodríguez-Arévalo, *S. galeottii* Cogn., and *S.*

guatemalensis Standl. & Steyerm. (Lira 2001; Rodríguez Arévalo 2003), but none of them is known to occur north of Querétaro in central Mexico.

The distribution of *Sicyos glaber* in the USA (Fig. 2) directly suggests that the species also occurs at least in Chihuahua, but I have not encountered records from Mexico. None is listed in SEINET (2011) or in the distributed database available through CONABIO/REMIB (2008).

2. SICYOS LACINIATUS L., Sp. Pl. 2: 1013. 1753. *Cissus laciniata* (L.) L., Syst. Nat. (ed. 10) 2: 897. 1759. **LECTOTYPE** (Lombardi 1997, p. 430): *"Sicyos foliis laciniatis"* in Plumier in Burman, Pl. Amer., 239, t. 243, f. 1, 1760. Figure 3 in the present manuscript. Regarding provenance, the protologue has only "Habitat in America calidiori. … Plum. spec. 3." Burman also noted "Hoc genus IRSIOLA a *Brouw.* in *Hist. Jam.* p. 147. cocatur, ubi tres alias species a nostra differentes describit, quæ sub nomine *Brijoniæ* in *Sloan. Hist. Jam.* occurrunt."

The provenance of the illustrated plant presumably is either Hispaniola, from where it is recorded by Liogier (1986) or Mexico. No species of *Sicyos* is known from Cuba, Jamaica, Puerto Rico or the Lesser Antilles. McVaugh (2001) noted that "Cogniaux (1881) knew this species from central Mexico and the southwestern United States only; he cited no West Indian specimens, though he did cite Plumier's plate 243." Plants of *S. laciniatus* from Hispaniola presumably arrived there via long-distance dipersal from Mexico.

Sicyos vitifolius Willd., Sp. Pl. 4(1): 626. 1805. **SYNTYPES**: Provenance unknown, herb. Willdenow 18071 (B-Willdenow fiche 18071!). Three sheets in the Willdenow herbarium are identified as "*S. vitifolia.*" None has provenance or other collection data. All show relatively deeply lobed leaves with dentate margins; two show very short staminate inflorescences).

The type, "taken from a cultivated plant of unknown provenance, probably from Mexico, is apparently a young flowering specimen of *S. laciniatus* L., with very short inflorescence, and coarsely toothed leaves having the primary lateral foliar veins curved and bordering the basal sinus." (McVaugh 2001, p. 643).

The protologue: "Habitat - - - - ☉. (v.v.)." "Foliis semiquinquelobis dentatis, piloso-viscosis et odore *Salviae coccineae* diversissima. Floras masculi et feminei duplo minores quam in *S. angulata*. Tota planta pube tenuissima viscosa obsita. W."

Sicyos laciniatus var. *subinteger* Cogn. in de Candolle, Monogr. Phan. 3:880. 1881. "Folia villosa vix hirsuta demum scabriuscula, leviter lobata, lobis late triangularibus non lobulatis." **SYNTYPES**: **USA. New Mexico**. 1851, *C. Wright 1091* (US; Boissier, BM, K, P). USA. New Mexico. "Ad flum. Rio Grande prope Doñana," Mex. Bound. Survey 399 (B, K, P). **Mexico**. *Scheide 1081* (B); *Ehrenberg 1081* (B); *Karwinsky s.n.* (Brussels); *Bourgeau 1058* (Boissier, Fournier, G-DC, K, L, P). Citations of herbaria are fide Cogniaux in the protologue.

The two collections from New Mexico are likely to be *Sicyos glaber*, from their geography. The others, from Mexico, presumably are *S. laciniatus*.

Sicyos ampelophyllus Woot. & Standl., Bull. Torrey Bot. Club 36: 111. 1909. **TYPE**: **USA**. New Mexico. Sierra Co.: Kingston, in and around the south end of the Black Range, in cultivated ground, ca. 2030 m, 5 Aug 1904, *E.O. Wooton 1195* (holotype: ?; duplicates: LL!, NY digital image!, TEX!, UNM). *Wooton 1195* is not housed at NMC, nor is it included in type databases of US or F.

Annuals. **Stems** (youngest portions) usually densely villous and stipitate-glandular, commonly glabrescent to a degree but remaining distinctly pubescent. **Leaves**: blades broadly ovate-angulate to reniform-angulate in outline, 3–5(–8) cm long, 4–11(–13) cm wide, shallowly 5-lobed,

lobes shallowly deltate to shallowly triangular or widely ovate, sinuses 1/5–1/4 to base, terminal lobe longer and broader, acuminate to acute, basal sinus broad-curved to nearly squarish, margins evenly and shallowly dentate, the teeth sharply indurate-apiculate, both surfaces hirsutulous-hispidulous, sometimes abaxially viscid-puberulent and sessile-glandular when very young, the glandularity deciduous by maturity; proximal pair of lateral veins closely bordering the edge of the basal sinus; petioles (1.5–)3–6(–8) cm long. **Pistillate inflorescence** 4–12-flowered, not enveloped by bracteal leaf, peduncle 2–4(–11) mm long. **Staminate inflorescence** 3–10-flowered; peduncle plus axis 3–25 mm long. **Pistillate flowers**: sepals linear to linear-triangular, 0.2–1.5 mm long, not foliaceous; corollas 1.5–2 mm long, including the narrow tube; stigmas 2-lobed. **Staminate flowers**: corollas ca. 2 mm long, white; stamens slightly exserted. **Fruits** ovoid, 5–6 mm long, glabrous, with antrorsely barbellate bristles.

Flowering Aug–Oct. Creek sides, floodplains, riparian woods, cottonwood-willow, juniper, oak, pine-oak, canyons, rocky slopes, cliff faces and bases; (1000–)1200–2400(–3000) m; Arizona (Apache, Cochise, Navajo, Pima, Yavapai cos.), New Mexico (Catron, Grant, Sierra, Socorro cos.), Texas (Jeff Davis Co.); Mexico ([Aguascalientes], Chiapas, Chihuahua, Coahuila, D.F., Durango, [Guanajuato], Hidalgo, [Jalisco], México, [Michoacan], Nuevo León, [Oaxaca], Puebla, [Querétaro], San Luis Potosí, Sinaloa, Sonora, [Tamaulipas], [Tlaxcala], [Veracruz], Zacatecas). Mexican states in brackets are cited by McVaugh (2001) and Lira (2001) but vouchers not seen in the present study. Distribution mapped in Figure 1.

Kearney and Peebles (1960) noted that *Sicyos laciniatus* var. *subinteger* was a synonym of *S. ampelophyllus*, the only species recorded here for Arizona. Their inclusion of *S. laciniatus* sensu stricto in the Arizona flora (based on "Lemmon in 1882" from Cochise Co.) reflected their interpretation that the two species were differentiated on leaf morphology. The lectotype of *S. laciniatus* (Fig. 3) has deeply lobed leaves (hence the epithet) — the morphology of this populational variant is more common in the southern part of the range of the species. As noted by McVaugh (2001, p. 643), "What he [Cogniaux] called var. *genuina* was the form with leaves lobed to the middle or more deeply, the lobes oblong and more or less lobulate. His var. *subintegra*, with leaves lightly lobed, the lobes broadly triangular and not lobulate, included specimens collected by the U.S.-Mexican Boundary Survey."

Additional collections examined. **ARIZONA. Apache Co.**: White Mts., ca. 5 mi SW of Eagar near bridge over Little Colorado River, Big Lake Road, climbing over shrubs, 7000 ft, 17 Sep 1963, *Barr 63-470* (ARIZ); Apache Natl Forest, mesa on E side of Murray Basin, ca. 2 air mi E of Flat Top, ca. 4.5 mi SE of Springerville, climbing in pinyon, 7500-7640 ft, 21 Sep 2005, *Nelson 67089* (RM). **Cochise Co.**: San Pedro Riparian Natl. Conservation Area, Upper San Pedro River floodplain, "Cottonwood" site, ca. 1 mi S of Hwy 90, ca. 200 m E of San Pedro, riparian, cottonwood understory, 7 Sep 2001, *Makings 783* (ARIZ, ASU-digital image!). **Chiricahua Mts.**: Cave Creek Canyon near Portal, 4900 ft, 26 Aug 1964, *Barr 64-478* (ARIZ); Paradise, 5300 ft, shady alluvium, 23 Sep 1907, *Blumer 1719* (ARIZ, NMC); Cave Creek Canyon, 21 Sep 1929, *Harrison, Kearney, and Hastings 6146* (ARIZ); Paradise, 5398 ft, 9 Oct 1966, *Hesselberg s.n.* (ARIZ); along road from Portal to Onion Saddle, ca. 6800 ft, pine-juniper-Cercocarpus, 8 Sep 1996, *McLaughlin 7023* (ARIZ); road from Cave creek to Rustler Park, 1.9 mi above jct with road to Paradise at Turkey Creek, 1.4 mi below Onion Saddle, pine-oak woodland, vine on roadside shrub at foot of cliffs, 7200 ft, 1 Sep 2001, *Sanders 24708* (TEX). **Huachuca Mts.**: Copper Creek, 5 Nov 1937, *Goodding 6618* (ARIZ); Fort Huachuca Military Reservation, along base of jumbled limestone cliffs, E-facing ridge, pine-oak-Cercocarpus association, ca. 7000 ft, 15 Sep 1989, *Reichenbacher 2815* (ARIZ). **Mule Mts.**: Golden Eagle Box Canyon, dense vegetation on rocky slope, 14 Sep 1955, *Goodding 26-55* (ARIZ); Banning Creek Canyon, ca. 2.5 mi NW of the tunnel at Bisbee on Hwy 80, O.F. Clarke property on the steep rocky slopes below Juniper Flats, oak woodland, locally common vine near the stream on the canyon

bottom S of the hwy, 5600 ft, 31 Aug 1984, *Sanders et al. 5257* (ARIZ, TEX). **Greenlee Co.**: Apache Forest, Upper Eagle Creek, riparian zone, 5150 ft, 28 Sep 1977, *Pase 2277* (RM). **Navajo Co.**: 5 miles W of Taylor on road to Pinedale at U.S. Forest Service Boundary, in shade of juniper near low meadow, 5900 ft, 9 Oct 1966, *Bohrer 1171* (ARIZ). **Pima Co.**: Catalina Mts., 4000 ft, 19 Aug 1903, *Jones s.n.* (RM); Rincon Mts. Dec 1907, *Goodding 12* (ARIZ). **Yavapai Co**: ca 2 km WSW of the confluence of Apache and Walnut Creeks, flood plain of moist dark brown soil, 1593 m, 1 Oct 1992, *Baker 10281* (ASU); Mingus Mountains 20 Sep 1936, *Goodding s.n.* (ARIZ); Prescott, 19 Sep 1926, *Loomis 3125* (ARIZ); Prescott, 8 Aug 1926, *Peebles, Harrison, & Kearney 2688* (ARIZ); Prescott, 1 Sep 1894, *Toumey s.n.* (ARIZ). **NEW MEXICO**. **Catron Co.**: Glenwood, shady areas under forest trees, 23 Sep 1941, *Hershey 2765* (NMC). **Grant Co.**: Ft. Bayard, 21 Sep 1907, *Barney s.n.* (NMC); 15 mi above Mimbres, Gila Wilderness Area, Mimbres River, moist sandy loam, 28 Aug 1966, *Crutchfield 2131* (LL); Lake Roberts, where Sapillo Creek enters the lake, low rocky shelf, 5800 ft, 20 Sep 1972, *Klue GAK-62* (ARIZ); US Hwy 180 where it crosses the Gila River just S of Cliff, sandy silt in shade of *Populus*, *Salix*, *Acer*, 13 Oct 1982, *Spellenberg 6866* (NMC). **Sierra Co.**: White Sands Missile Range, San Andreas Mts., Rhodes Canyon, Range Road 6, 11.7 mi from Road 7, limestone cliff face, 1710 m, 28 Sep 1989, *Herman 130* (NMC); White Sands Missile Range, ca. 57 air km E of Truth or Consequences in N part of San Andreas Mts., lower end of Rhodes Canyon, between Bear Den Canyon and Bosque Canyon, 0.1 mi E of Bosque Canyon, stopes below N-facing limestone cliffs, 9 Sep 1990, *Spellenberg & Hoban 10624* (NMC). **Socorro Co.[?]**: SE of the Mogollon Mts.,Sapello Creek, 6000 ft, 22 Aug 1900, *Wooton s.n.* (NMC). **Texas**. **Jeff Davis Co.**: Davis Mts., Mt. Livermore, upper slopes and near the peak, locally common vine, spreading on various plants, rocky knobs just S of peak, viscid, 4 Sep 1982, *Powell 3924* (TEX).

3. SICYOS MICROPHYLLUS Kunth in A. von Humboldt et al., Nov. Gen. Sp. 2(qto.): 119; 2(fol.): 95. 1817. **TYPE**: **Mexico**. Michoacan. "Crescit in monte ignivomo Jorullo, alt. 540 hex. (Regno Mexicano)?" (holotype: P fiche!, photos F, GH, MICH).

Elements of the description: " FOLIA alterna, petiolata, profunde sinuato-cordata, subseptemloba, denticulata, reticulato-quinquenervia, scabriuscula, membranacea, pollicem lata; lobis acutis aut subacuminatis, infimis minimis. PETIOLA 8-9 lineas longi, pilosi. ... RACEMI MASCULI axillares, longissime pedunculati, adjecto pedunculo subquadripollicares. FLORES longe pedicellati, paullo majores quam in praecedente; pedicellis, pedunculo et rhachi pilosis. PEDUNCULI FEMINEI in eadem axilla cum masculis, tres aut quatuor lineas longi, pilosiusculi. Flores nonnulli (4-5) capitato-congesti, subsessiles. ... PEPONES quatuor aut quinque, capitato-congesti, sessiles, ovati, compressiusculi, monospermi, echinis longis setiformibus scabris dense obsiti, magnitudine semini pomi."

Sicyos echinocystoides Cogn. in Rose, Contr. U.S. Natl. Herb. 3: 319. 1895. **SYNTYPES**: **Mexico**. **Nayarit**. Tepic, 5 Jan–6 Feb 1892, *Dr. E. Palmer 1894* (US, 2 sheets; isosyntypes: GH, NY digital image!). As synonym of *S. microphyllus* fide McVaugh (2001); the GH and NY sheets were annotated as *S. longisepalus* Cogn. by I. Rodriguez in 1997.

Sicyos deppei G. Don, Gen. Hist. 3: 34. 1834. **TYPE** (not designated): **Mexico**. **Veracruz**. "Near Jalapa." Don cited "Sicyos, nov. sp. Schlecht. et Cham. in Linnaea. vol. 5. p. 88 [1930]" and his description is no more than a translation of the Latin description provided by Schlectendahl and Chamisso.

Don's protologue: "Leaves broadly cordate, 7-lobed; lobes acuminated, middle lob the longest; margins densely denticulated, rough on both surfaces from conical hairs; male racemes elongated; fruit glomerate, ovate, nearly glabrous, but beset with strong retrograde prickles. ☉. S. Native of Mexico, near Jalapa. Flowers smaller than those of *S. angulatus*, but larger than those of *S. parviflorus*. ... Seeds the size of those of *Citrus medica*."

Sicyos deppei was used as the name of this species by Rodriguez Jimenez (1985) and Lira (2001), the latter acknowledging, fide a personal communication from McVaugh, that it might be a synonym of *S. microphyllus*. McVaugh (2001) explicitly included *S. deppei* as a synonym of *S. microphyllus*, and his lead is followed here. Use of *S. deppei* — vs. the earlier name by Kunth — apparently stems from Cogniaux (1881), who placed *S. microphyllus* in synonymy of *S. deppei*.

Sicyos collinus Rob. & Fern., Proc. Amer. Acad. Arts 30: 116. 1894. **SYNTYPES**: **Mexico. Chihuahua**. Cañon de San Diego, 17 Sep 1891, *C.V. Hartman 773* (GH; isolectotypes: NY digital image!, PH digital image!, US). Hills near Chihuahua, 23 Oct 1885, *C.G. Pringle 568* (GH, presumably). "A species near *S. Deppei* Don, but with leaves smaller and somewhat more acutely lobed, peduncles and inflorescences nearly or quite glabrous; petioles and pedicels shorter; and male flowers a little shorter."

Annuals. **Stems** (youngest portions) sparsely puberulent with stipitate-glandular hairs, often also hirsute-villous with viscid hairs, strongly to weakly glabrescent. **Leaves**: blades orbicular-pentagonal in outline, 4–10 cm long, (4–)6–12 cm wide, deeply lobed, sinuses (1/3–)1/2–2/3 to base, lobes deltate-acuminate to oblong-oblanceolate or obtrullate, basal sinus narrow to broad, margins sometimes with a few shallow, serrate teeth, not dentate, evenly sharply indurate-apiculate, barely scabrous, not ciliate, both surfaces hirsute to hispid-hirsute; proximal pair of lateral veins divergent from the edge of the basal sinus; petioles (1–)2–4(–7) cm long. **Pistillate inflorescence** 4–10-flowered, not enveloped by bracteal leaf, peduncle (0–)1–5(–10, 20) mm long. **Staminate inflorescence** 10–16-flowered; peduncle plus axis 40–140 mm long. **Pistillate flowers**: sepals mostly triangular, 0.2–2 mm long, not foliaceous; corollas 1–2 mm long, without a tube; stigmas 3-lobed. **Staminate flowers**: corollas 2–3 mm long, greenish white; stamens not exserted. **Fruits** ovoid, 5–8 mm long, sparsely and finely villous, with antrorsely barbellate bristles.

Flowering Sep–Oct. Rocky slopes and ridges, cliff bases, stream sides, yellow pine woodland, thickets; 2200–2600 m; New Mexico (Lincoln, Otero cos.), Texas (Jeff Davis Co.); Mexico (Chiapas, Chihuahua, Coahuila, [Colima], D.F., [Durango], [Guanajuato], [Guerrero], Hidalgo, Jalisco, México, Michoacan, Morelos, [Nayarit], [Nuevo León], Oaxaca, Puebla, [Querétaro], San Luis Potosí, Sinaloa, Sonora, [Tlaxcala], Zacatecas, Veracruz). Mexican states in brackets are cited by McVaugh (2001) and Lira (2001) but vouchers not seen in the present study. Distribution mapped in Figure 2.

Additional collections examined. **NEW MEXICO. Lincoln Co.**: near Gray, ca. 6000 ft, 6 Sep 1898, *Skehan 104* (NMC); White Mts., Jul-Aug 1898, *Townsend 28* (NMC); White Mts., Eagle Creek, 5 mi below crossing, 19 Sep 1899, *Turner s.n.* (NMC); White Mts., 7200 ft, 15 Aug 1897, *Wooton 346* (NMC, RM). **Otero Co.**: 21 mi SE of Cloudcroft, base of cliffs in yellow pine forest, 23 Aug 1956, *Waterfall 12966* (TEX); Sacramento Mts., Tularosa Creek, 18 Aug 1899, *Wooton s.n.* (NMC-2 sheets, RM). [**Torrance Co.**: Manzano Mts., Priest Canyon, 27 Sep 2002, Jercinovic 271 (UNM fide SEINET 2011)]. **TEXAS. Jeff Davis Co.**: **Davis Mts.**: Mt. Livermore, trailing on boulders near summit, 20 Sep 1966, *Correll 33742* (LL); Sawtooth Mt., upper slopes and on summit, 11 Sep 1967, *Correll 34982* (LL); Mt. Livermore, Oct 1934, *Hinckley s.n.* (TEX); Mt. Livermore, Oct 1935, *Hinckley s.n.* (TEX-2 sheets); Mt. Livermore, Oct 1978, *Johnston s.n.* (TEX); near foot of Sawtooth Mountain, thickets along small rocky creek, 4 Oct 1926, *Palmer 31932* (TEX); Mt. Livermore, upper slopes near the peak, locally common vine, spreading on various plants, rocky knobs just S of peak, 4 Sep 1982, *Powell & Powell 3924* (TEX); infrequent above upper springs in Madera Canyon on Mt. Livermore, 7800 ft, 11 Sep 1947, *Warnock 7456* (LL, SMU-2 sheets, TEX).

4. **SICYOS ANGULATUS** L., Sp. Pl. 2: 1013. 1753. **LECTOTYPE** (Jeffrey in Jarvis et al. 1980, p. 88) : Herb. Clifford 452, *Sicyos* 1 (BM 000647449 digital image!). The protologue notes "Habitat in Canada, Mexico."

Annuals. **Stems** moderately to densely villous-puberulent with glandular-viscid hairs, mixed with stipitate-glandular hairs. **Leaves**: blades orbicular-angulate to broadly ovate-angulate in outline, 4–12 cm long, 6–17 cm wide, shallowly 5-lobed to 5-angulate, terminal lobe deltate-acuminate to ovate-acuminate, basal sinus narrow to broad, margins evenly and minutely green-apiculate, minutely to prominently ciliate with gland-tipped hairs, both surfaces hispidulous-hirsute; proximal pair of lateral veins divergent from the edge of the basal sinus; petioles 1–7(–10) cm long. **Pistillate inflorescence** 8–16-flowered, not enveloped by bracteal leaf, peduncle 20–50 mm long. **Staminate inflorescence** 10–21(–34)-flowered; peduncle plus axis 30–220 mm long. **Pistillate flowers**: sepals linear to linear-triangular, 0.5–1 mm long, not foliaceous; corollas 1–2 mm long, without a tube; stigmas 3-lobed. **Staminate flowers**: corollas 4–5 mm long, white to greenish-white; stamens prominently exserted. **Fruits** ovoid-beaked, 9–15 mm long, densely villous to minutely villosulous or glandular-villosulous, with antrorsely barbellate bristles.

Flowering Jun–Oct(–Nov). Stream and river banks, creek bottoms, alluvial floodplains, disturbed woods, thickets, clearings, vacant lots, fallow fields, railroad banks; 0–300 m. Canada: Ontario, Que. USA: Ala., Ark., Conn., Del., D.C., Fla., Ga., Ill., Ind., Iowa, Kans., Ky., La., Maine, Md., Mass., Mich., Minn., Miss., Mo., Nebr., N.H., N.J., N.Y., N.C., N.Dak., Ohio, Okla., Pa., R.I., S.C., S.Dak., Tenn., Tex., Vt., Va., W.Va., Wisc. Reported by Randall (2007) as invasive in Europe (Austria, Czech Republic, England, Finland, France, Hungary, Italy, Russia, Spain) and Asia (Japan, South Korea, Taiwan). Not mapped.

In Texas, at the southwestern corner of its range, *Sicyos angulatus* occurs only in a narrow, north-south band along the eastern margin of the Edwards Plateau (see Turner et al. 2003), continuing northward in Oklahoma. There is a broad gap through east Texas and eastward to where the distribution picks up in central Louisiana. The peculiar distribution in Texas appears to be a biological reality. Fruits in Texas may average slightly smaller but I can find no other difference between the Texas plants and those elsewhere in the range.

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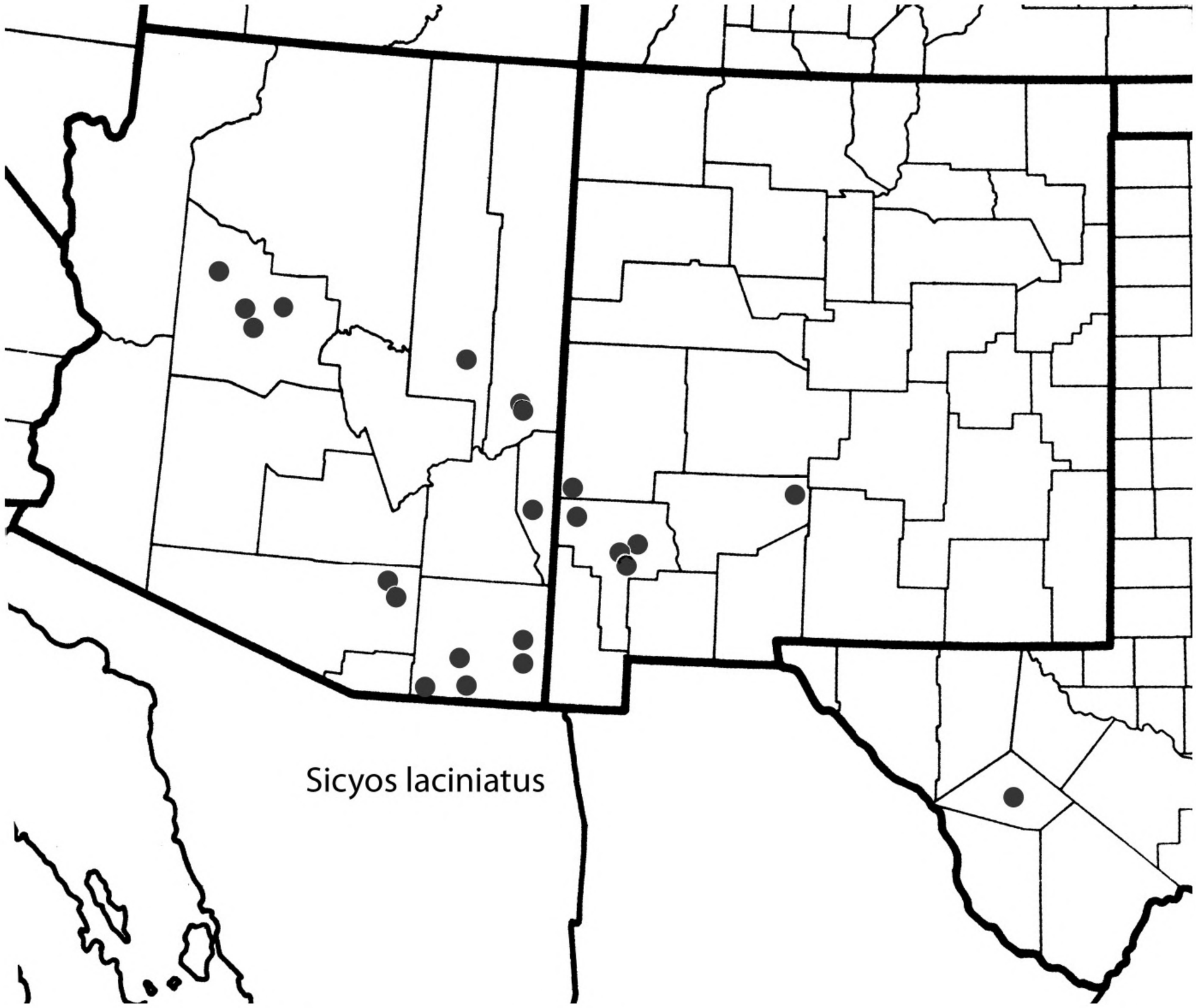

Figure 1. Distribution of *Sicyos laciniatus* in the USA.

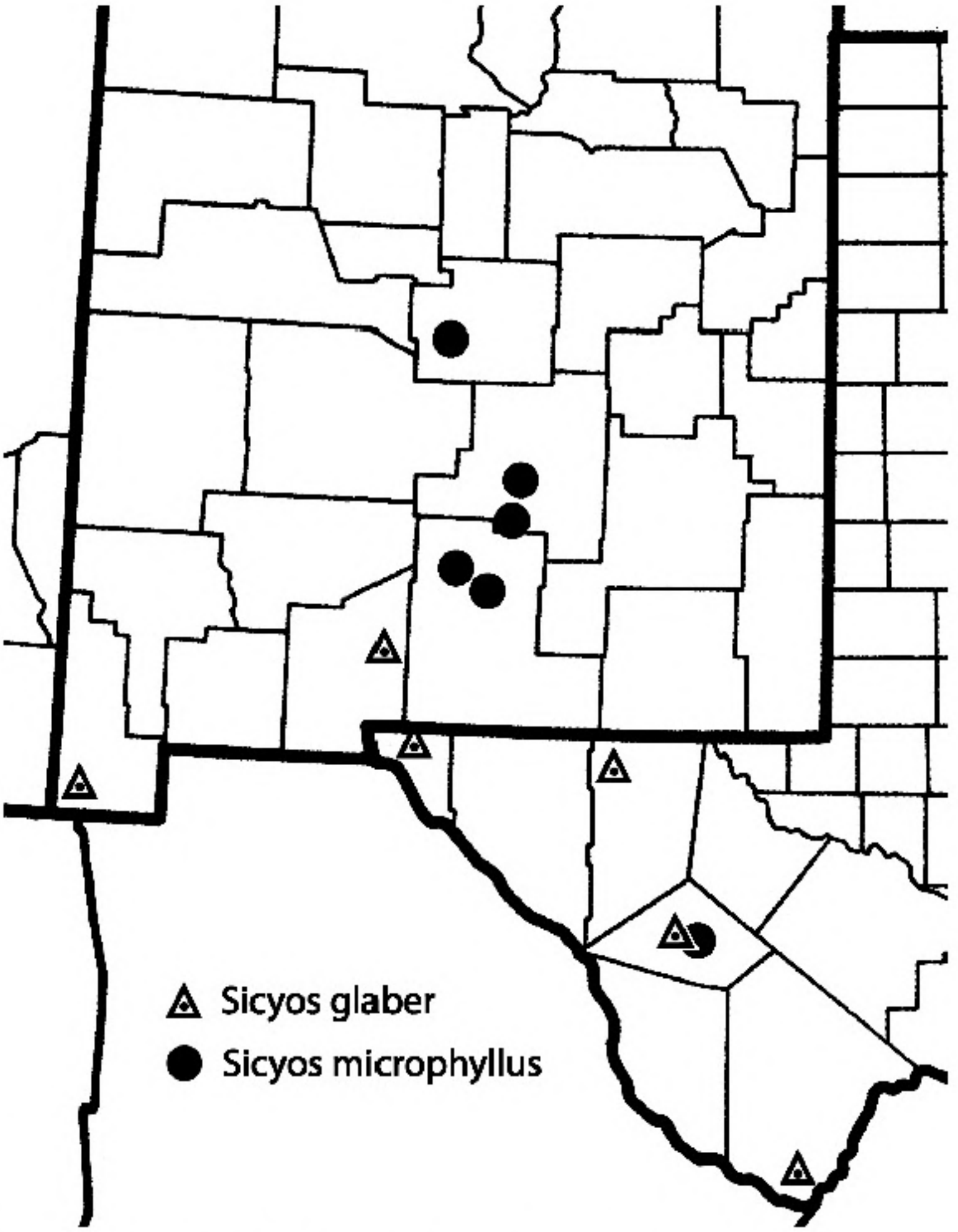

Figure 2. Distribution of *Sicyos glaber* and *Sicyos microphyllus* in the USA.

Figure 3. Lectotype of *Sicyos laciniatus*. *"Sicyos foliis laciniatis"* — Plumier in Burman, Pl. Amer., 239, t. 243, f. 1, 1760.